

## Questions

## on lesson one

Questions signed by  have been taken from the school book.



## 1. Choose the correct answer :

1. During skating on ice, a(an) ..... arises.
  - a. friction force
  - b. movement force
  - c. electricity
  - d. (b) and (c)
2. ..... slows down the moving object.
  - a. Movement force
  - b. Heat energy
  - c. Friction force
  - d. Kinetic energy
3.  Friction force acts in a direction ..... the direction of motion.
  - a. opposite to
  - b. perpendicular to
  - c. parallel to
  - d. is the same
4. The reason for moving the ball on the floor of your room for a longer time than on street is that .....
  - a. the friction force between the ball and the street is larger than that between the ball and the floor.
  - b. the friction force between the ball and the floor is equal to that between the ball and the street.
  - c. the friction force between the ball and the floor is larger than that between the ball and the street.
  - d. (a) and (b) are correct.
5. There is a friction force between .....
  - a. the bicycle's tire and the road.
  - b. the ball and the ground.
  - c. two books touch each other.
  - d. all the previous answers.
6. Sliding a body down over another body means that .....
  - a. the friction force between the two bodies is larger than the movement force.
  - b. the friction force between the two bodies is smaller than the movement force.
  - c. the movement force between the two bodies is smaller than the friction force.
  - d. no correct answer.
7. Friction force depends on .....
  - a. the type of the material surface only.
  - b. the surface area of the moving object.
  - c. the speed of the moving object.
  - d. (a), (b) and (c).
8. When the surface area of the moving object increases, the friction force .....
  - a. increases.
  - b. decreases.
  - c. doesn't change.
  - d. (a), (b) and (c).

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9. Friction between a small marble and ceramic is ..... that between a big marble and ceramic.  
 a. larger than      b. smaller than      c. equal to      d. zero

10. Friction force increases .....  
 a. by increasing the surface area of the moving object.  
 b. between rough surfaces.  
 c. between smooth surfaces.  
 d. (a) and (b).

11. When the speed of the moving object increases, the friction force .....  
 a. increases.      b. decreases.  
 c. doesn't change.      d. (a), (b) and (c).

12. The stopping of a bike gradually during movement is due to the increase in .....  
 a. the friction force.      b. the magnet.  
 c. the attraction force.      d. all the previous answers.

13. The moving bike is affected by air resistance that acts ..... to its movement.  
 a. in the perpendicular direction      b. in the opposite direction  
 c. in the same direction      d. parallel

14. Air resistance increases when .....  
 a. the car velocity decreases.      b. the car velocity increases.  
 c. the car changes its direction.      d. the car doesn't move.

15. Modern cars are designed with streamline shapes to .....  
 a. increase air resistance.      b. decrease water resistance.  
 c. be attractive.      d. decrease air resistance.

16. Air resistance for a moving bicycle depends on .....  
 a. the speed of the bicycle.      b. the surface area of the bicycle.  
 c. the colour of the bicycle.      d. (a) and (b).

17. By increasing the surface area of a moving train, air resistance increases. This means that there is .....  
 a. a direct relation between them.      b. an indirect relation between them.  
 c. a curved relation between them.      d. no relation between them.

18. Rockets and aircrafts have streamline shapes .....  
 a. to increase air resistance.      b. to decrease air resistance.  
 c. to increase the surface area.      d. to decrease water resistance.



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10. Friction force depends only on the type of the material surface and the surface area of the moving object. ( )
11. There is a direct relation between the speed of the moving object and the friction force. ( )
12.  Air resistance decreases when the car moves so fast. ( )
13.  The relationship between the surface area of an object exposed to air and air resistance is an inverse relation. ( )
14. By increasing the bicycle speed, air resistance increases. ( )
15. Water resistance increases by increasing the surface area of the moving object. ( )
16. Birds and bats stretch their wings during landing to decrease air resistance. ( )
17.  When the parachutist opens his parachute, air resistance decreases. ( )
18.  Air resistance for objects that move at high speed can't be observed. ( )
19. The streamline shape of the ship increases water resistance. ( )
20. Air resistance is the friction force resulting from the movement of any object through water. ( )

**3. Write the scientific term of each of the following :**

1.  The force that slows down the moving object and its effect is in the opposite direction of the object movement. ( ..... )
2. The force that arises between two surfaces when one of them slides over the other. ( ..... )
3. A force acts in the opposite direction to the movement force. ( ..... )
4.  The friction force between air and the moving objects through it. ( ..... )
5. The force that opposes the movement direction of the parachutist. ( ..... )
6. The relation between the surface area of a moving body and air resistance. ( ..... )
7. It is the friction force resulting from the movement of any object through water. ( ..... )
8. A force opposes the motion of a boat in the river. ( ..... )
9. A force increases when the speed of the swimmer through water increases. ( ..... )

## 4. Complete the following statements :

- When a body touches another body, a ..... arises.
- The force that slows down the objects' motion is called .....
- The effect of the friction force is in the ..... direction of the object's movement.
- The reason for stopping a ball after pushing it on ground is .....
- When a rubber ball touches a sandy floor, ..... arises.
- Any body moves when ..... force is smaller than ..... force.
- When you stop pedalling during the movement of the bike, its speed decreases gradually until it stops due to the effect of .....
- ..... and ..... are from the factors affecting the friction force.
- ..... increases by increasing the surface area of a moving object.
- Friction force increases between ..... surfaces and ..... between smooth surfaces.
- The value of ..... between two surfaces depends on the type of material of both surfaces.
- The friction force between air and the object that moves through it is called .....
- Air resistance acts in ..... to the movement direction.
- By increasing the speed of a car, air resistance .....
- Air resistance ..... when the car or the bicycle moves slowly.
- Rockets, ..... and ..... are designed in streamline shapes to .....
- Birds and bats have ..... to decrease air resistance.
- Parachutist opens the parachute and birds stretch their wings on landing to increase ..... that accordingly increases the .....
- When a body moves through water, it is affected by .....
- The resistance of water is in a direction ..... to the direction of object's motion.
- The friction force between water and the object that moves through it is called .....
- The movement of fish or ships through water is in the opposite direction to the .....
- ..... and ..... are the factors affecting water resistance and air resistance.
- Fish have streamline shapes to .....
- By increasing the speed of ships in water, the ..... increases and vice versa.

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## 5. Give reasons for the following :

1. If you push a toy car on the floor, it moves for a certain distance till it stops.
2. When you stop pedalling during the movement of the bike, it slows down.
3. There is a direct relation between the friction force and the surface area of the moving object.
4. The friction force depends on the type of the material surface.
5. Marble moves on the ground of the classroom for a longer distance than that on the playground.
6. Friction force between glass and glass is smaller than that between glass and wood.
7. Air resistance depends on the speed of the body that moves through air.
8. Rockets, trains, modern cars and aircrafts have streamline shapes.
9. Birds bodies have streamline shapes.
10. Parachutist opens the parachute on landing.
11. Bat stretches its wings on landing.
12. A fish has a streamline shape.
13. When the speed of the swimmer decreases, water resistance decreases.
14. Air resistance and water resistance slow down the movement of the body.

## 6. What happens if ... ?

1. You stop pedalling during the movement of the bike.
2. You increase the surface area of the moving object.
3. The speed of the aircraft increases.
4. A swimmer swims in water with a very high velocity.

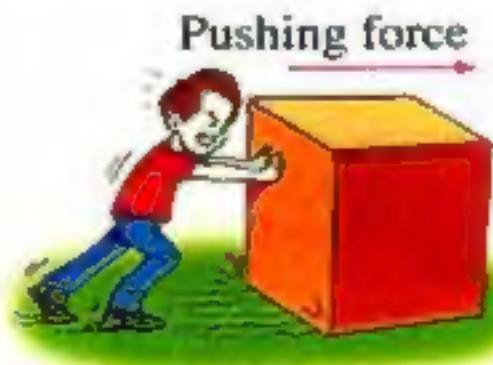
## 7. Write a brief account of friction.

8.  What happens if you drop two similar sheets of paper, one of them is folded and the other is unfolded. Which one reaches the ground first ? Give reason.

## 9. What is meant by ... ?

1.  Friction force.
2. Air resistance.
3. Water resistance.

10.  Draw the direction of the friction force in the opposite diagram.





## Timss Questions

1. Explain why the cube in figure (1) doesn't move, while the cube in figure (2) slides down.



Figure (1)



Figure (2)

2. Look at the opposite figure, then answer :

1. When you throw a marble on the ground, why does it slow down gradually ?
2. What is the direction of the force that causes the stopping of the moving marble ?



3. Which of the following figures is affected by air resistance and which is affected by water resistance.



Fig. (a)



Fig. (b)



Fig. (c)



Fig. (d)



Fig. (e)



Fig. (f)

## Questions

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# on lesson two

### 1. Choose the correct answer :

1. All the following are advantages of friction except .....
  - it helps in moving and stopping cars and bicycles.
  - it enables us to control the car speed.
  - it enables us to walk.
  - it damages the internal moving parts of machines.
2. The friction between your shoes and the ground prevents .....
  - walking.
  - running.
  - slipping down.
  - writing.
3. Car brakes that are used to stop cars depend on .....
  - air resistance.
  - water resistance.
  - friction force.
  - (a), (b) and (c).
4. Friction force is necessary for .....
  - lighting a match.
  - changing the car direction.
  - moving a car forwards.
  - (a), (b) and (c).
5. Friction between the internal moving parts of a machine causes .....
  - the erosion of the machine parts.
  - the damage of the machine parts.
  - the increase in their temperature.
  - all the previous answers.
6. Friction causes a great loss of money, because .....
  - it causes damages for machines.
  - it forms magnets.
  - it repairs a lot of machines.
  - it provides the machines with new parts.
7. To decrease the friction force, we must use .....
  - lubricants and oil.
  - batteries.
  - ball bearings.
  - (a) and (c).
8. All of the following factors reduce the friction force except .....
  - lubricants.
  - oil.
  - increasing the surface area of the moving parts.
  - using ball bearings.

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9. .... can be used to form a thin layer between the internal moving parts of machines to decrease friction.  
 a. Lubricating      b. Oiling      c. Ball bearing      d. (a) and (b)

10. Technicians put all the following materials between the internal parts of machines except ....  
 a. lubricants.      b. oil.      c. ball bearings.      d. rough balls.

11. It is advisable not to increase the car speed up to a certain limit ....  
 a. to reduce air resistance.      b. to reduce the consumption of fuel.  
 c. to increase its surface area.      d. (a) and (b).

12. Modern cars are designed in streamline shapes to ....  
 a. increase air resistance.      b. decrease water resistance.  
 c. be attractive.      d. decrease air resistance.

13. The rubber tires of the car have curved grooves to ....  
 a. squeeze the water out.      b. control the vehicle.  
 c. make their shapes beautiful.      d. trap the water under them.

14. The presence of water on a road, .... the friction force between car tires and the road.  
 a. increases      b. decreases      c. keeps      d. doesn't affect

**2.** Put (✓) in front of the right statement and (✗) in front of the wrong one, then correct it :

1. Friction is necessary for lighting a match. ( )

2. Controlling the car speed and changing its direction is one of the advantages of friction force. ( )

3. Friction force prevent us from slipping down during walking. ( )

4. Friction between the moving parts of machines causes a rise in their temperature and damage for machines. ( )

5. Damage of machines is from the disadvantages of friction. ( )

6. Ball bearings are used to increase the friction force. ( )

7. Lubricants and oil are used to decrease the friction force. ( )

8. Ball bearings reduce the friction force as they consist of small metallic balls with smooth surfaces. ( )

9. Air resistance decreases when the car moves so fast. ( )

10. Car drivers must increase the speed of their cars in order to decrease the fuel consumption. ( )

11. Car tires have grooves and channels to squeeze water out as water increases the friction force. ( )

12. Car tires should be replaced when their grooves disappear. ( )

**3. Write the scientific term of each of the following :**

1. A force enables us to control the car speed and to change its direction. ( ..... )
2. A force helps us in running and walking. ( ..... )
3. The force which is necessary for lighting a match. ( ..... )
4. Materials used to reduce the friction force by forming a thin layer between the internal moving parts of machines. ( ..... )
5. A set of small balls with smooth surfaces is put between the internal moving parts of machines. ( ..... )
6. A metallic structure used to decrease the friction force. ( ..... )
7. A structure exists in the axis of a car engine and transmits the motion from the car engine to the wheels. ( ..... )

**4. Complete the following statements :**

1. ..... is necessary to control the car speed and to change its ..... .
2. ..... enables us to walk on ground.
3. ..... of a match is from the advantages of friction.
4. Car breaks depend on ..... force in slowing down and stopping cars.
5. ..... is from the disadvantages of friction force.
6. The rise in temperature of the moving parts of machines is due to .....
7. Lubricating and oiling the mechanical machines reduce the ..... between their moving parts and prevent their .....
8. ..... and ..... are used to decrease the effect of friction force between the internal moving parts of machines.
9. ..... is formed of a group of small metallic balls with smooth surfaces.
10. The axis of the car engine that transmits the motion from it to the wheels contains .....
11. Ball bearings are designed to reduce the friction force, because they contain ..... balls that have ..... surfaces.
12. Increasing the speed of a car causes the increase of ..... and the consumption of .....

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13. The modern cars save the consumption of fuel than the old ones, because they have .....
14. Car tires have ..... connected with ..... to squeeze the water out.
15. The presence of ..... and ..... in car tires reduce the effect of water in friction force.
16. The wet roads leads to ..... between car tires and the road.

**5. Give reasons for the following :**

1. The car movement needs friction force.
2. Friction force has many disadvantages.
3. Damage of the internal parts of machines.
4. Lubricants and oil are used in the mechanical machines.
5. Ball bearings are put between the surfaces of the moving parts of machines.
6. The friction force between the metallic balls of a ball bearing is almost non-existent.
7. Car drivers shouldn't increase the car speed up to a certain limit.
8. Technicians put ball bearings between the internal moving parts of machines.
9. Friction force causes a great economical loss.
10. A large amount of fuel is consumed when the car moves with high speed.
11. The presence of grooves and narrow channels in car tires.

## 6. What is meant by ... ?

Ball bearings.

## 7. What happens if ... ?

1. ... Absence of friction between car tires and the road.
2. ... Absence of friction between your shoes and the road.
3. The internal moving parts of machines touch each other.
4. ... No lubrication takes place periodically on the metallic machine parts.
5. Engineers design modern cars and aircrafts with large surface areas.
6. The temperature of the internal moving parts of machines increases.
7. Technicians put ball bearings between the internal moving parts of machines.
8. ... Moving cars with high speed on a wet road.
9. There are no grooves and narrow channels in the car tires.

## 8. Mention the use of :

1. Lubricants and oil in machines.
2. Ball bearings in the car engine.
3. Ball bearings in mechanical machines.

## 9. ... The friction force is very necessary. Write the advantages of friction.

## 10. ... Mention the most important ways to decrease the friction force.



## Timss Questions

1. The following photos shows car (A) which is a modern car and car (B) which is an old one. Complete the following sentences :



Car (A)



Car (B)

1. Air resistance that affects car ..... is greater than that affects car .....
2. Car (A) has a ..... shape that reduces the ..... which acts in the opposite direction of its motion and also decreases the consumption of .....

2. The opposite figure shows a young running girl.

1. Mention the type of friction that opposes her during running.



2. The ..... force between the ground and her ..... helps her to stop running.

3. The opposite figure shows an electrical saw.

Answer the following questions :

1. Why does the temperature of the electrical saw become high ?

2. Why is oil used to lubricate the moving parts of machines ?



Electrical saw

## Unit 1

## Lesson 1

25

Test yourself 1

**Answer each of the following questions :****1 Complete the following statements :**

(5 marks)

1. The friction force between air and the object that moves through it is called .....
2. By increasing the ..... and ..... of the body, the air resistance increases.
3. ..... and ..... are the factors that affect friction force.
4. Parachutist opens the parachute during landing to increase its ..... that increases .....
5. Rockets and ..... are designed in streamline shapes to .....

**2 (A) Give reasons for :**

(5 marks)

1. Birds stretch their wings on landing.

.....  
.....  
.....

2. The cars and aircrafts are designed with streamline shapes.

.....  
.....  
.....

**(B) What are the factors affecting the air resistance ?**

.....  
.....  
.....

**3 Rewrite the following statements after correcting the underlined words :**

(5 marks)

1. Friction force depends on the colour of the two touching objects.

.....  
.....  
.....

2. As the exposed surface area of the object increases, the resistance of air decreases.

.....  
.....  
.....

3. Trains and aircrafts are designed in streamline shapes to increase the air resistance.

.....  
.....  
.....

4

## Test yourself

4. **Water resistance** is the friction force that results from the movement of objects through air.

5. When the velocity of a train **decreases**, the air resistance increases.

4 Look at the opposite figure, then answer the following questions : (5 marks)

1. What is meant by air resistance ?

.....

2. Why does the front part of the aircraft have a streamline shape ?

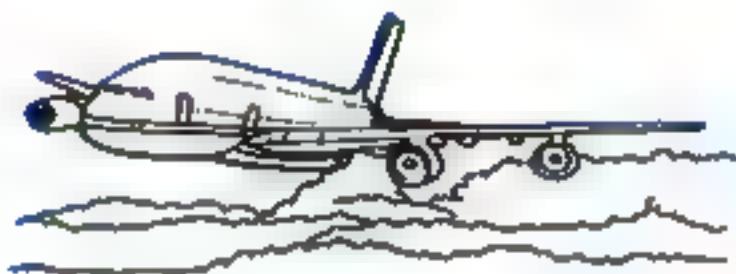
.....

3. Give two examples of other bodies have streamline shapes.

.....

4. Complete :

If the direction of movement is forward, so the direction of the air resistance is .....



5 Choose from column (B) what suits it in column (A) : (5 marks)

| (A)  | (B)   |
|--|---|
| 1. The moving car is affected by the air resistance that acts                      | a. is a direct relation.                      |
| 2. Friction between rough surfaces   | b. increase their surface area.               |
| 3. By increasing the speed of a train,   | c. is more than that between smooth surfaces. |
| 4. Birds stretch their wings on landing to   | d. in the opposite direction of its movement. |
| 5. The relation between the surface area of the moving body and the air resistance | e. the air resistance increases.              |

1. ....

2. ....

3. ....

4. ....

5. ....

## Unit 1

## Lesson 1

25

## Test yourself

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**Answer each of the following questions :****1 (A) Mention two methods to decrease the water resistance.**

(5 marks)

.....  
.....  
.....

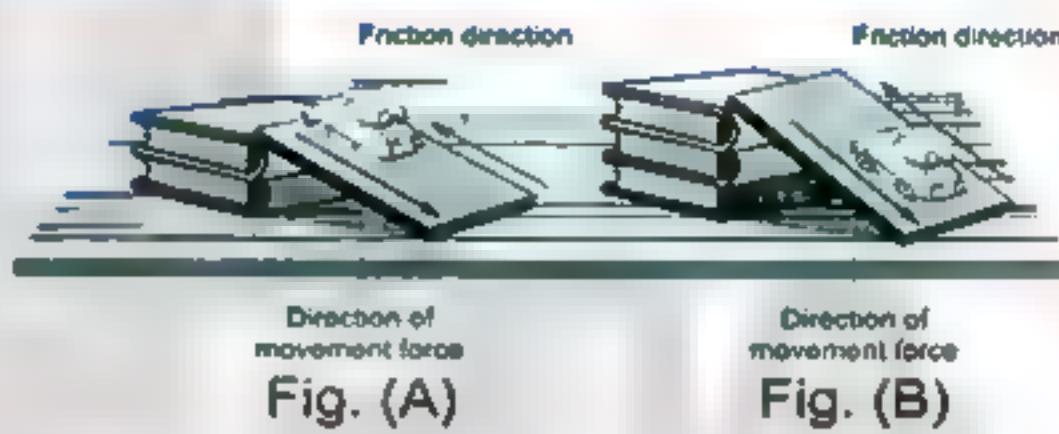
**(B) Look at the opposite figures, then answer the following questions :**

1. What is the reason that causes the sliding down of the toy car in figure (B) ?

.....  
.....

2. Why doesn't the toy car in figure (A) move ?

.....  
.....

**2 Complete the following statements by using the words between brackets :**

(5 marks)

( air resistance - streamline - friction - water resistance - opposite direction - increase - decreases )

1. .... is the friction force that results from the movement of objects through water.
2. The movement of the ship is in the ..... of the water resistance.
3. Fish have ..... shapes to decrease the water resistance.
4. By decreasing the speed of dolphin in water, the water resistance ....
5. .... is one of the types of friction force.

**3 (A) Give reasons for :**

(5 marks)

1. When the speed of a swimmer decreases, water resistance decreases.
2. Air and water resistances slow down the movement of a body.
3. Dolphin has a streamline shape.

## (B) What is meant by the water resistance ?

## 4 Choose the correct answer :

(5 marks)

1. There is ..... relation between the water resistance and the surface area of the moving body.
  - a curved
  - a direct
  - an indirect
  - no
2. ..... is a type of friction force as a body moves through water.
  - Air resistance
  - Water resistance
  - Electrical resistance
  - Magnetic resistance
3. Sliding a body down over another body means that .....
  - friction force between the two bodies is larger than the movement force.
  - friction force between the two bodies is smaller than the movement force.
  - movement force between the two bodies is smaller than the friction force.
  - friction force is equal to movement force.
4. The friction force between rough surfaces is ..... that between smooth surfaces.
  - larger than.
  - less than
  - zero
  - similar
5. ..... is (are) from the factors affecting water resistance.
  - The speed of the body through water
  - The surface area of the body that moves through water
  - Lighting of a match
  - (a) and (b)

## 5 (A) The following graph indicates the relation between the surface area of the moving body and the water resistance. (5 marks)

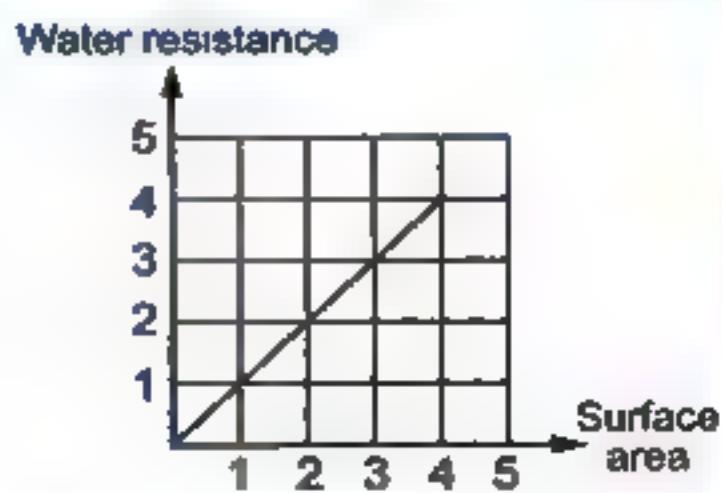
1. What is the type of this relation ?

2. Complete :

The increasing in the surface area of the moving body through water causes the increase .....

## (B) What happens when ... ?

1. The surface area of the ship that moves through water decreases.
2. A swimmer swims with a very high velocity.



## Unit 1

## Lesson 2

25

## Test yourself

3

**Answer each of the following questions :****1 Complete the following statements :**

(5 marks)

1. The presence of ..... and channels in car tires reduce the effect of water on a wet road.
2. ..... and ..... are from the advantages of friction force.
3. Reducing the car speed causes reducing the air resistance and decreasing ..... consumption.
4. ..... that are used to stop the car depends on friction force.

**2 (A) Give reasons for :**

(5 marks)

1. Lubricants and oil are used in machines.
2. Friction force causes a great economical loss.
3. Car tires should be replaced when their grooves disappear.

**(B) Rewrite the following statements after correcting the underlined words :**

1. Oil increases friction force between the moving parts of machines.
2. When a car moves quickly on a wet road, the friction force increases and the control of the car is very easy.

**3 (A) What happens if ... ?**

(5 marks)

1. Absence of friction between car tires and the road.
2. The temperature of the internal moving parts of machines increases.
3. There are no grooves and narrow channels in car tires.

## Test yourself

## (B) Put (✓) or (✗) :

(5 marks)

1. Air resistance decreases when a car moves so fast. ( )
2. Lighting a match needs friction force. ( )
3. Car tires have grooves and channels to squeeze water out. ( )
4. Controlling the car speed and changing its direction is one of the advantages of friction force. ( )

## 4 Write the scientific term :

(5 marks)

1. Materials that form a thin layer between the internal moving parts of machines in order to reduce friction force between them. ( ..... )
2. A set of small balls with smooth surfaces placed between the internal moving parts of machines. ( ..... )
3. A force that helps us to walk and run. ( ..... )
4. They depend on friction force to slow down or stop a car. ( ..... )
5. A force that causes increasing of temperature of internal moving parts of machines. ( ..... )

## 5 (A) Choose the correct answer :

(5 marks)

1. Modern cars are designed with stream line shapes to .....  
 a. increase air resistance.      b. decrease air resistance.  
 c. decrease fuel consumption.      d. (b) and (c)
2. In car engines, ..... exist to transmit the motion from the car engine axis to the wheels.  
 a. lubricants      b. oil      c. ball bearings      d. battery
3. All the following are advantages of friction force except .....  
 a. it helps in moving and stopping cars.  
 b. it is necessary for lighting a match.  
 c. it enables us to walk.  
 d. it causes increasing of temperature of internal moving parts of machines.
4. Car brakes that are used to stop cars depend on .....  
 a. air resistance.      b. water resistance.  
 c. friction force.      d. (a) , (b) and (c).

## (B) Mention the most important ways to decrease friction force :

(5 marks)

## Model Exam On Unit 1

25

Answer each of the following questions :

## 1 Write the scientific term :

(5 marks)

1. A force opposes the motion of a boat in the river. ( ..... )
2. A force enables us to control the car speed and change its direction. ( ..... )
3. A force produced when a ball touches the floor. ( ..... )
4. A set of small balls with smooth surfaces is put between the internal moving parts of machines. ( ..... )
5. A force resulting from the movement of objects through air. ( ..... )

## 2 Complete the following statements :

(5 marks)

1. ..... exists between two surfaces when they touch each other and it acts in the ..... direction of the movement.
2. ..... and ..... are the factors that affect the air resistance.
3. Fish have streamline shapes to ..... while birds have streamline shapes to .....
4. There is a ..... relation between the surface area of the moving bird and air resistance.
5. The friction between your shoes and ..... helps in walking and prevents .....
6. ..... of a match is one of the advantages of friction.

## 3 (A) Give reasons for :

(5 marks)

1. Rockets, trains and aircrafts have streamline shapes.  
.....
2. A rise in the temperature of the internal moving parts of machines.  
.....
3. The narrow channels of car tires are connected with curved grooves.  
.....

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## Test yourself

**(B) What happens if we drop two similar plastic sacs, one of them is folded and the other is unfolded. Which one reaches the ground first ? Give reason.**

**4** Look at the opposite figure that shows a parachutist flies in air : (5 marks)

1. Why does the parachutist open his parachute on landing ?

2. Draw arrows to refer to the direction of air resistance and the direction of movement.

3. Mention the factors affecting air resistance.



**5** Put (✓) or (✗), then correct the wrong ones : (5 marks)

1. During riding a bicycle, there is a magnetic force between the bicycle tires and the road.

( ) .....

2. The friction force between rough surfaces is larger than that between smooth surfaces.

( ) .....

3. The car speed shouldn't increase up to a certain limit to save fuel.

( ) .....

4. The friction force increases by decreasing the speed of the body.

( ) .....

5. The friction between your shoes and ground helps in walking.

( ) .....